UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,538	03/15/2004	Akio Saiki	SUNSTAF-1033	1294

7590 06/06/2008

KNOBLE YOSHIDA & DUNLEAVY LLC
Eight Penn Center
Suite 1350
1628 John F. Kennedy Blvd.
Philadelphia, PA 19103

EXAMINER	
BERTHEAUD, PETER JOHN	
ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
06/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,538	SAIKI ET AL.	
	Examiner	Art Unit	
	PETER J. BERTHEAUD	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/22/2008 has been entered. It is noted that claim 1 has been amended and claims 19-23 have been cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 7, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631.

Takeshi discloses a piston type compressor comprising: a housing having a front housing 4 and a rear housing 6 and forming a plurality of first and second cylinder bores 12a, 13a and a suction chamber 16 formed in the rear housing 6, the rear housing 6 being located rearward of the second cylinder bores 13a; a rotary shaft 24 rotatably

supported by the housing and having a rotational axis, the rotary shaft having an inner chamber 37 along the rotational axis, first suction communication passage 38 and a second suction communication passage 39, the inner chamber 37 communicating with the suction chamber 16 near a front end of the rear housing, wherein the first cylinder bores 12a and the second cylinder bores 13a are arranged around the rotational axis of the rotary shaft; a plurality of double-headed pistons 30a connected to the rotary shaft 24, each of the pistons being accommodated in the first cylinder bore and the associated second cylinder bore to respectively define a first compression chamber and a second compression chamber, each of the pistons reciprocating for compressing gas in the first compression chambers and the second compression chambers as the rotary shaft rotates; a first suction valve mechanism (see 40a and 38) rotatably provided on the rotary shaft 24 near a rear end of the front housing 4 for introducing the gas from the suction chamber 16 to the first compression chambers (see cylinder 12a), the first suction valve mechanism (see 40a and 38) including a first rotary valve (see 38) that has the first suction communication passage 38 for sequentially interconnecting the inner chamber 37 and the first compression chambers (see cylinder 12a) in a suction process as the first suction valve mechanism (see 40a and 38) rotates synchronously with the rotary shaft 24; and a second suction valve mechanism (see 41a and 39) rotatably provided on the rotary shaft 24 near the front end of the rear housing 6 for introducing the gas from the suction chamber 16 to the second compression chambers (see cylinder 13a), the second valve mechanism (see 41a and 39) including a second rotary valve (see 39) that has the second suction communication passage 39 for

sequentially interconnecting an outer circumference of the inner chamber 37 and the second compression chambers (see cylinder 13a) in the suction process as the second suction valve mechanism (see 41a and 39) rotates synchronously with the rotary shaft 24. However, Takeshi does not teach the following claimed limitation taught by Parrott.

Parrott teaches a gearbox for a rotary, mineral cutting head comprising: a rotary shaft 9 with an inner chamber (see chamber enclosed by 42), a partition wall 43 located in the inner chamber along the rotational axis of the rotary shaft 9 for dividing the inner chamber into a first passage and a second passage (see 42 and 43 in Fig. 1), the first passage (inside 43) interconnecting a delivery port 41 with supply conduit 45, which is further connected to a pump, the second passage (inside 42) interconnecting a delivery port 41 with a separate supply conduit 46, which is further connected to a pump. Parrott further teaches that the partition wall 43 has a rear end portion, which protrudes from the inner chamber into a delivery chamber (see area that 41 opens into). Clearly, this structure makes it obvious that the partition wall could have a rear end portion that is closer to the suction chamber (16 in Takeshi) than a front end of the second communication passage (39 in Takeshi). Parrott also teaches that the partition wall 43 has a hollow cylindrical shape (see 43 in Fig. 1), an inside space of the of the partition wall forming the first passage, an outside space of the partition wall in the inner chamber forming the second passage (see configuration of 42 and 43 in Fig. 1 and col. 6, lines 15-29). Parrott further teaches that the cross section of the partition wall is circular (see col. 6, lines 15-24). Parrott also teaches that the inner chamber comprises a large-diameter chamber (see 42) and a small-diameter chamber (see 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compressor of Takeshi, by placing a partition wall within the inner chamber of the rotary shaft, its end portion located behind the front end of the communication part, thereby making the compressor capable of distributing refrigerant gas in two separate passages to various holes within the inner chamber; this is done in order to facilitate an even distribution of a fluid to different areas of the apparatus (Parrott, col. 6, lines 24-29).

Furthermore, it should be recognized that when the partition wall of Parrott is placed into the shaft of Takeshi, the gas in the first passage and the second passage will maintain substantially the same pressure as in the suction chamber. With that being said, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

4. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631, and in further view of Fukanuma 6,558,133.

Takeshi in view of Parrott discloses the invention as discussed above. However Takeshi in view of Parrott does not teach the following claimed limitations taught by Fukanuma.

Fukanuma (Fig. 1) teaches a variable displacement compressor comprising a rotary shaft 16, an inner chamber 42 within the rotary shaft and a oil chamber 40 into which the inner chamber extends via end portion 39. Fukanuma further teaches that a cross-sectional area of the rear end portion is the largest in the inner chamber and that the rear end portion has a funnel shape (see 39 in Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compressor of Takeshi in view of Parrott, by altering the partition wall to be shaped like a funnel in order to facilitate movement of fluid into the inner chamber (Fukanuma, col. 8, lines 61-65).

5. Claims 8, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631, and in further view of Oshima 3,888,604.

Takeshi in view of Parrott discloses the invention as discussed above. Takeshi also discloses that the housing further comprising a pair of cylinder blocks 2a, 2b that define a crank chamber 23 for accommodating a crank mechanism 27,32 that converts the rotation of the rotary shaft into the reciprocating movement of the piston 30a, a pair of thrust bearings 29 being located on an outer circumferential side of the rotary shaft 24 along the rotational axis for restricting the rotary shaft to move along the rotational axis. Furthermore, it is well known in the art that the gas being compressed in

refrigerant compressors contains lubricating oil for lubricating an inside of the compressor. However, Takeshi in view of Parrott does not teach the following claimed limitations taught by Oshima.

Oshima discloses a compressor for a refrigerating machine comprising a double headed piston 12; a rotary shaft 8; a pair of thrust bearings 15 being located on an outer circumferential side of the rotary shaft 8 along the rotational axis for restricting the rotary shaft to move along the rotational axis, a pair of lubricating holes (see holes leading to 15 in Fig. 3) extending through the rotary shaft 8 for supplying the lubricating oil in the inner chamber to the thrust bearings, the lubricating holes being respectively located at positions corresponding to the thrust bearings (see position of the holes in Fig. 3), at least one of the lubricating holes communicating with an outer circumference of the inner chamber.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compressor of Takeshi in view of Parrott, by implementing holes in the wall of the rotary shaft in order to lubricate the thrust bearings. This combination builds on the combination of Takeshi in view of Parrott in that the partition wall that runs down the center of the rotary shaft would now be capable of distributing the lubricant to either the first lubricating hole via the first passage, the second lubricating hole via the second passage, or to both lubricating holes via the first or second passage. This combination thereby makes the compressor capable of distributing refrigerant gas, mixed with lubricant, in two separate passages to

various holes within the inner chamber; this is done in order to facilitate an even distribution of a fluid to different areas of the apparatus (Parrott, col. 6, lines 24-29).

6. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631, and in further view of Oshima 3,888,604, and still in further view of Kato 4,127,363.

Takeshi in view of Parrott, and in further view of Oshima discloses the invention as discussed above. However, Takeshi in view of Parrott, and in further view of Oshima does not teach the following claimed limitations taught by Kato.

Kato teaches a swash-plate type compressor comprising a double-headed piston 13, a rotary shaft 6, with an inner chamber 23 and a pair of lubricating holes built into the lubricating shaft 6. Kato further teaches that the rotary shaft 6 has an inner surface for defining the inner chamber 23, a wall surface (see wall with plane perpendicular to that of the rotary axis that leads the lubricant into bore 24, and thus the crank chamber in Fig. 1) being provided near at least one of the lubricating holes in the inner chamber 23.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compressor of Takeshi in view of Parrott, and in further view of Oshima, by implementing a wall surface perpendicular to that of the rotary axis in order to direct lubricant to portions of the compressor intended (Kato, see arrows in Fig. 1 that show the directing of the lubricant).

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631, and in further view of Oshima 3,888,604, and still in further view of Ikeda 5,181,834.

Takeshi in view of Parrott, and in further view of Oshima discloses the invention as discussed above. However, Takeshi in view of Parrott, and in further view of Oshima does not teach the following claimed limitations taught by Ikeda.

Ikeda teaches a swash-plate type compressor comprising a double-headed piston 25, a rotary shaft 18, with an inner chamber 40, a pair of lubricating holes 53 built into the lubricating shaft 18 for lubricating bearings, and a through hole 51 in the rotary shaft 18 for releasing lubricant. Ikeda further teaches a lubricating passage 52 formed in the housing for interconnecting the inner chamber 40 and the crank chamber 4 (see col. 4, lines 41-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compressor of Takeshi in view of Parrott, and in further view of Oshima, by implementing lubricating passages formed in the housing for interconnecting the second passage and the first passage to the crank chamber in order to allow the lubricant to be recycled (Ikeda, col. 4, lines 44-50).

8. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631.

Takeshi in view of Parrott discloses the invention as discussed above as well as the first passage being longer than the second passage.

Takeshi in view of Parrott discloses the claimed invention except for the cross-sectional area of the first passage is larger than that of the second passage. It would have been an obvious matter of design choice to make the cross section of the one of the passages, in order to get more flow through the passage, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (see MPEP 2144.04, IV. A – Changes in Size/Proportion).

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi JP 07-063165 in view of Parrott 4,846,631.

Takeshi discloses a piston type compressor comprising: a housing having a front housing 2a, 4 and a rear housing 2b, 6 and forming a plurality of first and second cylinder bores 12a, 13a and a suction chamber 16; a rotary shaft 24 rotatably supported by the housing and having a rotational axis, the rotary shaft having an inner chamber 37 along the rotational axis, the inner chamber communicating with the suction chamber 16 near a front end of the rear housing, wherein the first cylinder bores 12a and the second cylinder bores 13a are arranged around the rotational axis of the rotary shaft; a plurality of double-headed pistons 30a connected to the rotary shaft 24, each of the pistons being accommodated in the first cylinder bore and the associated second cylinder bore to respectively define a first compression chamber and a second compression chamber, each of the pistons reciprocating for compressing gas in the first compression chambers and the second compression chambers as the rotary shaft rotates; a first suction valve mechanism (see 40a and 38) rotatably provided on the rotary shaft 24 near a rear end

of the front housing 2a,4 for introducing the gas from the suction chamber 16 to the first compression chambers (see cylinder 12a), the first suction valve mechanism (see 40a and 38) including a first rotary valve (see 38) that has the first suction communication passage 38 for sequentially interconnecting the inner chamber 37 and the first compression chambers (see cylinder 12a) in a suction process as the first suction valve mechanism (see 40a and 38) rotates synchronously with the rotary shaft 24; and a second suction valve mechanism (see 41a and 39) rotatably provided on the rotary shaft 24 near the front end of the rear housing 2b, 6 for introducing the gas from the suction chamber 16 to the second compression chambers (see cylinder 13a), the second valve mechanism (see 41a and 39) including a second rotary valve (see 39) that has the second suction communication passage 39 for sequentially interconnecting an outer circumference of the inner chamber 37 and the second compression chambers (see cylinder 13a) in the suction process as the second suction valve mechanism (see 41a and 39) rotates synchronously with the rotary shaft 24.

Therefore, Takeshi in view of Parrott discloses the claimed invention except for a partition wall having a planar shape. At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to place a partition wall down the center of the inner chamber in order to have two separate channels distributing fluid to the compressor because such a modification would amount to a mere duplication of parts. Applicant has not disclosed that the wall's arrangement or disposition provides an advantage, is used for a particular purpose, or solves a stated problem and it has been held that mere duplication of the essential working parts of a

device involves only routine skill in the art (*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)) (see MPEP 2144.04, VI. B. – Duplication Of Parts).

Response to Arguments

10. Applicant's arguments filed 2/22/2008 have been fully considered but they are not persuasive.

11. In response to Applicant's arguments with respect to the newly amended portions of claim 1: Applicant argues that neither the Takeshi nor the Parrott prior art reference discloses, teaches or suggests the "suction chamber formed in the rear housing, the rear housing being located rearward of the second cylinder bores". Examiner respectfully disagrees. It is clearly seen in Takeshi that suction chamber 16 is located in rear housing 6 and is rearward of cylinders bores 12a and 13a. Therefore, the prior art combination reads on the reference. Applicant also argues that neither the Takeshi nor the Parrott prior art reference discloses, teaches or suggests that "the partition wall has a rear end portion that is closer to the suction chamber than a front end of the second communication passage". Examiner respectfully disagrees. Due to the construction of the partition wall 43 in Parrott, particularly how it protrudes from the inner chamber into a delivery chamber (see area that 41 opens into), it would have been obvious that a rear end portion of the wall could have been formed closer to the suction chamber, element 16 in Takeshi (more specifically inside the suction chamber, which is how its pictured in the Application), than a front end of the second communication passage (39 in Takeshi). Moreover, the terminology "rear end portion" is very broad and could refer to many

different areas on the rear end of the partition wall; thus strengthening the case that this limitation would be obvious.

Furthermore, at the time the invention was made, it would have been an obvious matter of design choice to form the partition wall closer to the suction chamber than a front end of the second communication passage, because Applicant has not disclosed that this arrangement, is used for a particular purpose, or solves a stated problem. It has been held that mere rearrangement of the essential working parts of a device involves only routine skill in the art. In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (see MPEP 2144.04, VI. C. - Rearrangement of Parts).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER J. BERTHEAUD whose telephone number is (571)272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

PJB
/Peter J Bertheaud/
Examiner, Art Unit 3746